CLAIMS

1. A device that moves along the surface of an object situated in a gas, comprising a stereoshaped first region having an annular surface A and a stereoshaped second region situated inside the surface A and having a surface B, wherein the surface A is a boundary surface between the surface of the object and the first region and the surface B is a boundary surface between the surface of the object and the second region, the portion defining the outer boundary of the surface A is provided with an outer seal member, the portion defining the inner boundary of the surface A is provided with an inner seal material, the first region is connected to a gas suction means that sucks a gas from within the first region, the second region is connected to a liquid supply means which supplies a liquid to the second region, the first region is positioned downstream of a gas surrounding the surface of the object, the first region and the second region, the first region is positioned downstream of the second region, portion of the liquid supplied to the second region that exceeds the cubic volume of the second region, i.e., the liquid flowing downstream from the second region, reaches the first region and is subsequently transported to the suction means by riding the flow of the gas being sucked away from the first region.

2. A device that moves along the surface of an object described in Claim 1, having a pressure adjustment means that adjusts the pressure of the second region to any designated pressure.

3. A device that moves along the surface of an object having the pressure adjustment means that adjusts the pressure of the second region to any designated pressure, i.e., a method of obtaining the optimum pressure for each of various applications of this invention, described in Claim 2, such pressure adjustment means comprising an upstream side valve chest connected to a liquid supply pump, a downstream side valve chest connected to the second region, a valve opening connecting the upstream side valve chest and the downstream side valve chest, a valve that opens and closes the valve opening and a valve-operating means that causes the valve to open and close, so configured that the pressure of the second region is adjusted to any designated pressure by way of the valve being opened or closed due to the pressure difference between the actual pressure of the second region and any designated pressure set as the pressure adjustment goal.

4. A device that moves along the surface of an object having the valve-operating means described in Claim 3, such valve-operating means being so configured that, where Fc is

the force of the liquid inside the upstream side valve chest that acts on the valve and in the direction of the valve and Fb is the force of the liquid inside the downstream side valve chest that acts on the valve and in the direction of the valve, wherein the configuration of the valve-operating means that opens and closes the valve causes a force of the same strength as Fc and in the opposite direction from Fc to act on the valve, and causes a force Fx in the opposite direction from Fb and corresponding to the goal value of pressure adjustment to act on the valve, the valve opens when $Fb < Fx$ and the valve closes when $Fb > Fx$.

5. A device that moves along the surface of an object having the valve-opening means described in Claim 3, such valve-operating means being so configured that, where Fc is the force of the liquid inside the upstream side valve chest that acts on the valve and in the direction of the valve and Fb is the force of the liquid inside the downstream side valve chest that acts on the valve and in the direction of the valve, wherein the configuration of the valve-operating means that opens and closes the valve causes a force of the same strength as Fc and in the opposite direction from Fc to act on the valve, causes a force Fo attributable to atmospheric pressure or a force Fo attributable to the pressure of a gas surrounding the surface of an object, the first region and the second region to act on the valve and in the opposite direction from Fb, and causes a force Fs of an elastic body, such as a spring, to act on the valve and in the same direction as Fb, the valve opens when $Fb + Fs < Fo$ and the valve closes when $Fb + Fs > Fo$.

6. A device that moves along the surface of an object described in Claims 1 through 5 and having a means that emits ultrasonic waves or a means that receives ultrasonic waves or both of the means at the second region.

7. A device that moves along the surface of an object described in Claims 1 through 5 and having a means that generates cavitation at the second region.

8. A device that moves along the surface of an object described in Claims 1 through 7 and having a means that measures the quantity of the liquid supplied to the second region Q by unit time, the absolute pressure Pa of the first region and the absolute pressure Pb of the second region and calculates values that are equivalent to the aggregate volume of voids existing on the surface of an object based on Q, Pa and Pb.

9. A device that moves along the surface of an object described in Claims 1 through 8 and having a differential pressure control valve between the first region and the second region so configured that the differential pressure control valve opens when the absolute pressure of the second region minus the absolute pressure of the first region exceeds a certain designated pressure value, allowing the fluid to flow from the second region to the first region, and the differential pressure control valve closes when the absolute pressure of the second region minus the absolute pressure of the first regions returns to the designated pressure value.

10. A device that moves along the surface of an object described in Claims 1 through 9 and having wheels or link belts for allowing the first region and the second region to move along the surface of the object.

11. A device that moves along the surface of an object described in Claims 1 through 10 wherein the outer seal member has a self-sealing shape whereby the outer seal member is pressed against the surface of the subject by the pressure of the gas outside the outer seal member, and the inner seal member has a self-sealing shape whereby it is pressed against the surface of the object by the pressure of the liquid in the second region.

12. A pressure adjustment device comprising the upstream side valve chest, the downstream side valve chest, the valve opening that connects the upstream side valve chest and the downstream side valve chest, the valve that opens and closes the valve opening and the valve-operating means that causes the valve to open and close so configured that the pressure of the region located downstream is adjusted to the adjustment goal pressure by way of the valve being opened and closed due to the pressure difference between the actual pressure of the region located downstream and the adjustment goal pressure, such valve-operating means being so configured that, where Fc is the force of the fluid inside the upstream side valve chest that acts on the valve and in the direction of the valve and Fb is the force of the fluid inside the downstream side valve chest that acts on the valve and in the direction of the valve, wherein the configuration of the valve-operating means that opens and closes the valve causes a force of the same strength as Fc and in the opposite direction from Fc to act on the valve, and causes a force Fx in the opposite direction from Fb and corresponding to the goal value of pressure adjustment to act on the valve, the valve opens when $Fb < Fx$ and the valve closes when $Fb > Fx$.

13. A pressure adjustment device comprising the upstream side valve chest, the downstream side valve chest, the valve opening that connects the upstream side valve chest and the downstream side valve chest, the valve that opens and closes the valve opening and the valve-operating means that causes the valve to open and close so configured that the pressure of the region located downstream is adjusted to the adjustment goal pressure by way of the valve being opened and closed due to the pressure difference between the actual pressure of the region located downstream and the adjustment goal pressure, such valve-operating means being so configured that, where Fc is the force of the fluid inside the upstream side valve chest that acts on the valve and in the direction of the valve and Fb is the force of the fluid inside the downstream side valve chest that acts on the valve and in the direction of the valve, wherein the configuration of the valve-operating means that opens and closes the valve causes a force of the same strength as Fc and in the opposite direction from Fc to act on the valve, causes a force Fo attributable to the pressure of the fluid in any region to act on the valve and in the opposite direction from Fb, and causes a force Fs of an elastic body, such as a spring, to act on the valve and in the same direction as Fb, the valve opens when $Fb + Fs < Fo$ and the valve closes when $Fb + Fs > Fo$.

14. A device that moves along the surface of an object made of a porous material with numerous voids on the surface, comprising a stereoshaped region M that has a surface M wherein the surface M is the boundary surface between the surface of the object and the region M, the portion that defines the outer boundary of the surface M is provided with an outer seal member, the region M is connected to a suction means that sucks fluids, the region N is space consisting of a fluid that surrounds the region M and the entire surface of the object, so configured that the fluid in the region N reaches the region M through the voids and is subsequently transported by suction to the suction means riding the fluid being sucked out of the region M, and further comprising a measurement means that measures the quantity by unit time of the fluid which moves from the region N to the region M through the voids Q, the absolute pressure of the region M Pa and the absolute pressure of the region N Pb and a calculation means that calculates values that are equivalent to the aggregate volume of the voids based on Q, Pa and Pb.